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Facilities and Equipment FACT SHEET

Meat Inspection Division • Agricultural Research Service • U.S. Department of Agriculture

A50.9

R313

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MID-FE-1

March 8, 1963

SUBJECT: Air Screens for Insect Control

The "air curtain," "air screen," or "fly chaser fan" is one method of keeping insects out of plants. This method has long been used by the meat industry and often recommended by the Meat Inspection Division. Recently there has been a significant surge of interest in this type of device.

This new interest is shown by: (1) The entrance of several additional manufacturers into the air-curtain fabrication field and vigorous advertising of their wares; (2) inquiries from many meat packers concerning effectiveness and acceptability of air curtains; and (3) surveys by various public health agencies on efficiency and desirability of air curtains for insect control.

In-plant observations and correspondence with inspectors in various parts of the country, public health officials, and equipment manufacturers show that air curtains are reasonably effective insect repellants if they conform to several important standards. These basic requirements are:

(1) Velocity of the air stream must be at least 1600 feet per minute (about 18 miles per hour) at a point 3 feet above the floor for overhead mounted units, or 1600 feet per minute across the entire opening, if side-mounted facilities are installed. In either case, the air stream should be at least 2" wide (preferably about 5") to assure a satisfactory barrier against persistent flying or crawling insects.

(2) The air stream must cover the entire opening, with either overhead or side mounted units. Unenclosed and ductless overhead fans are seldom effective because the air stream produced is likely to dissipate before reaching floor level. This would not protect the opening uniformly.

(3) The air stream from overhead units should be directed downward and slightly outward, while the stream from side-mounted units should be directed to converge at a mid-point just outside the opening to be protected.

(4) The air stream-producing device should be designed to produce full air movement instantly when the motor is switched on. The switch for fan units should be installed so that the motor is activated automatically and immediately when the door is opened.

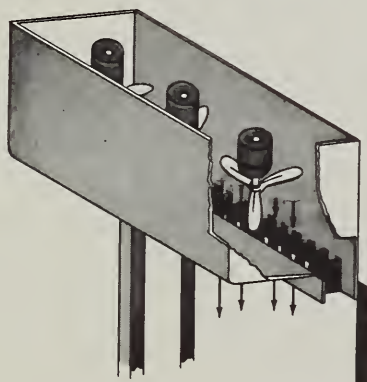
The efficiency of any air screen is decreased by adverse winds of significant speed. Where prevailing winds blow toward an opening protected by an air

screen, it is necessary to increase the velocity of air from the protective unit above the 1600 feet-per-minute minimum. This is to assure that the air stream maintains the necessary velocity across the opening and is not deflected inside the doorway. Exhaust fans or systems in areas protected by air screens will decrease insect control by creating a negative pressure within the room. This tends to draw the air stream inward from its intended outward path and actually, in some cases, pull insects into the building.

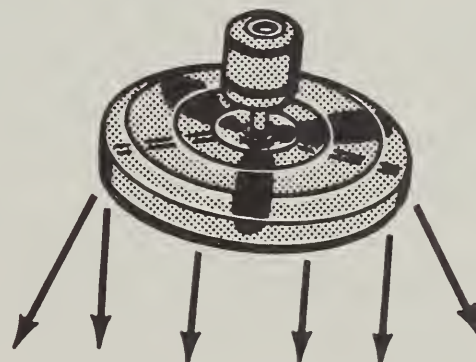
To aid in insect and dust control, whether or not air curtains are used, MID recommends that a positive air pressure be maintained in the food handling area. This is best achieved by means of suitable, well-placed, motor-driven air-intake fans, and ducts, equipped with dust and insect filters and heating elements. These should be used with strategically located exhaust ports without fans.

Air curtains are not likely to be 100 percent effective. If properly designed, installed, and operated, they may be valuable adjuncts to regular insect control methods. These, of course, include: (1) Elimination of insect-breeding sites on the premises; (2) scrupulous sanitation in the vicinity of meat plants, with particular attention given to removal of all possible insect attractants near doors and other openings; and (3) proper screening of doors, windows, and other openings through which insects may enter.

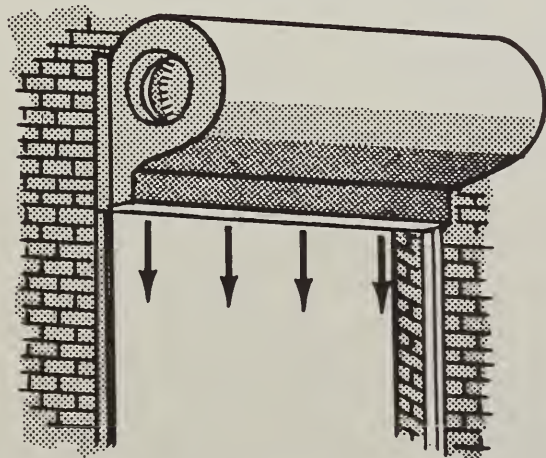
Here are sketches of commonly used types of air screens:



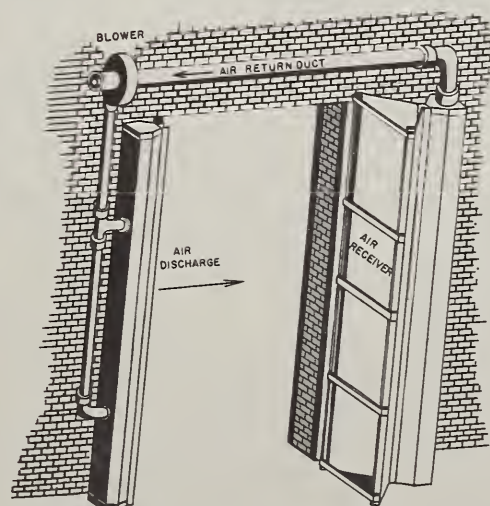
OVERHEAD PROPELLER UNIT
(with duct)



OVERHEAD PROPELLER UNIT
(not enclosed, no duct)



OVERHEAD SQUIRREL CAGE UNIT
(with duct)



SIDE MOUNTED UNIT

